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The USENIX Association Newsletter

Volume 15, Number 5

September/October 1990

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The closing date for submissions for the next issue of *;login:* is October 26, 1990.



THE PROFESSIONAL AND TECHNICAL
UNIX® ASSOCIATION

NOTICE

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The USENIX Association is a not-for-profit organization of those interested in UNIX[†] and UNIX-like systems. It is dedicated to fostering and communicating the development of research and technological information and ideas pertaining to advanced computing systems, to the monitoring and encouragement of continuing innovation in advanced computing environments, and to the provision of a forum where technical issues are aired and critical thought exercised so that its members can remain current and vital.

The officers of the Association are:

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|--------------------|---|
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Contributions Solicited

Members of the UNIX community are encouraged to contribute articles to *login:*. Contributions may be sent electronically to *login@usenix.org* or through the U.S. mail to the Association office. The USENIX Association reserves the right to edit submitted material.

UUNET Subscriptions

UUNET Communications
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Acknowledgments

The Association uses a Sun[‡] 3/180S running SunOS for support of office and membership functions, preparation of *login:*, and other Association activities. Connected to the Sun is a QMS Lasergrafix* 800 Printer System donated by Quality Micro Systems of Mobile, Alabama. It is used for general printing and draft production of *login:* and *Computing Systems* with *ditroff* software provided by mt Xinu. The membership and mailing lists are maintained using Sybase.[#]

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Call for Papers: USENIX C++ Conference

USENIX is pleased to host its third C++ conference in Washington, D.C., April 22-25, 1991. Monday and Tuesday will offer tutorials; Wednesday and Thursday are technical sessions. This announcement provides early information about the date of events as well as persons to contact for further information. The pre-registration packet containing detailed Conference information and hotel reservation information will be mailed in February, 1991.

The meeting headquarters will be the Washington, D.C. Sheraton Hotel.

Schedule of Events

Tutorials

April 22-23

Introductory and intermediate tutorials will be provided on the C++ language, libraries, and environments. Please contact the program chair if you wish to propose to give a tutorial or to suggest a topic you would like to see covered in a tutorial.

Technical Sessions

April 24-25

The technical sessions will cover the spectrum of recent research, development, and experience developing C++ software. Papers are solicited on all aspects of C++, including:

- Language features
- Compilers
- Programming environments
- Class libraries
- Experiences

Extended abstracts of at most 2500 words (10 pages double-spaced) should be submitted electronically (PostScript, troff, or TeX) or eight (8) copies on paper to the program chairman by **November 30, 1990**. Authors will be notified of acceptance by January 25, 1991 and final camera-ready papers are due March 1, 1991.

Queries about the technical program and all submissions should be directed to the program chairman:

Mark Linton
Silicon Graphics, Inc.
2011 N. Shoreline Blvd.
P.O. Box 7311
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Telephone (415) 335-7204
FAX (415) 965-7651
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Purdue University

Rob Seliger,
Hewlett-Packard

Jonathan Shopiro,
AT&T Bell Laboratories

Michael Tiemann,
Cygnus Support

Jim Waldo,
HP Apollo



IEEE COMPUTER SOCIETY

Call for Participation: Symposium on Experiences with Distributed and Multiprocessor Systems (SEDMS)

Atlanta, GA, March 21-22, 1991

Sponsored by the USENIX Association in association with the NSF/Purdue/Florida Software Engineering Research Center, in cooperation with ACM SIGCOMM and SIGOPS and the IEEE-CS Technical Committees on Distributed Processing, Operating Systems, and Software Engineering.

Goals

The goal of this symposium is to bring together individuals who have built, are building, or will soon build distributed and multiprocessor systems, especially operating systems. The symposium will feature full presentations and (perhaps) panels on aspects of building, testing, debugging, and using these systems. We will provide a forum for individuals to exchange information on their experiences, both good and bad, including experiences with coding aids, languages, distributed debugging tools, prototyping, reuse of existing software, performance analysis, and lessons learned from use of such systems. Extra-long breaks between sessions and work-in-progress presentations will be provided to facilitate a workshop-like atmosphere during the symposium.

Submissions

Ten copies of each submission or panel proposal should be sent to the program committee chair (address below) to arrive no later than **November 19, 1990**. Submissions of *full papers* are invited on any topics related to the theme of the symposium. The committee will give preferential consideration to submissions describing experiences with actual systems – papers describing theoretical work or simulations are unlikely to be accepted. Panel proposals should include a description of the relevance to the goals of the SEDMS, and the qualifications of the participants suggested.

Important Dates

| | |
|-----------------------|---------------|
| Submissions due | Nov. 19, 1990 |
| Notifications mailed | Jan. 7, 1991 |
| Camera ready copy due | Jan. 30, 1991 |

For further information, contact:

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Roger Shultz (Rockwell International)
Gene Spafford (Purdue University/SERC)
Satish Tripathi (University of Maryland)



CALL FOR PAPERS

Third IEEE Conference On Computer Workstations: Accomplishments And Challenges

Sponsored by the IEEE Technical Committee on Operating Systems (TCOS)

The Sea Crest Resort, Falmouth, Cape Cod (Massachusetts)

May 15-17, 1991

General chair:

Luis Felipe Cabrera
IBM ARC

Local arrangements:

Noah Mendelsohn
IBM Cambridge

Publicity chair:

Ken Kane
SUN Microsystems

Publications chair:

Dorothy Marsh
Cornell University

Hardware exhibits:

Pat Mantey
U. C. Santa Cruz

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Walter Tichy
Universität Karlsruhe
Robbert Van Renesse
Vrije Universiteit
Robin Williams
IBM ARC
Paulo Verissimo
INESC Portugal
Greg Zack
Xerox DRI

As we enter the 1990's, changes in technology will require rethinking the role of the workstation in the computing environment. Gigabit communication, desktop parallel computing, and multimedia applications are now emerging. The key to effective computing in this new world is the interface between the user and the computing environment: the workstation. What challenges must be overcome to make effective use of emerging technologies? CCW '91 seeks to foster dialogue between builders of workstation-based applications and technological innovators. Papers may focus on experiences with ambitious applications as well as on research topics. Topics include:

- Design of workstation computing environments
- Workstation and system architecture
- Application and system management
- User interface technologies
- Exploiting parallelism and massive memory
- Network support for high performance distributed computing
- Computer-aided software engineering
- Information management systems
- Real-time sensing and control
- Issues of scale
- Innovative ideas and technologies

Papers should be no longer than about 5000 words (20 double-spaced pages), and must be received by September 15, 1990. Authors will be notified of acceptance by December 1, 1990, and final camera-ready copy is due by January 15, 1991. Both technical and case-study papers are solicited; case studies should describe existing systems and include performance or operational data where practical.

The conference will also include a poster session for discussing work in progress. Individuals with a specific interest in participating in the poster session are invited to submit a one-page abstract describing their project. In addition, the program committee will invite the authors of some of the submitted papers to present their work in the poster session.

Send five copies of each submission to:

Prof. Keith Marzullo
Program co-chair, CCW '91
Department of Computer Science, Upson Hall
Cornell University
Ithaca NY 14853

Important dates:

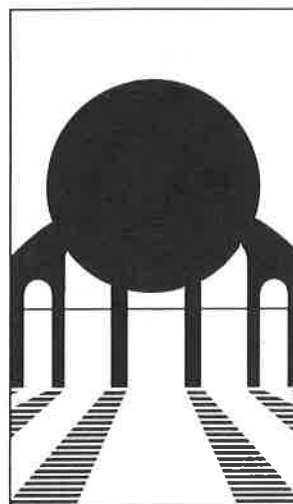
| | |
|----------------------------|--------------------|
| Submissions due | September 15, 1990 |
| Notification of acceptance | December 1, 1990 |
| Camera-ready copies due | January 15, 1991 |



European UNIX[®] systems User Group

PRELIMINARY ANNOUNCEMENT and CALL FOR PAPERS
**EUUG Spring '91 Conference
and Exhibition at**

**Tromsø, Norway
20-24 May, 1991**



Preliminary Announcement

The EUUG will host the Spring '91 European UNIX Systems User Group Technical Conference in Tromsø, Norway, Europe.

The Conference will concentrate on Distributed Open Systems in Perspective. In addition to an overview of the issues involved in the design of distributed open systems the conference will address problems encountered and solutions found when distributed open systems are employed.

The three day Conference with commercial Exhibition on Open Systems, UNIX and related subjects will be accompanied by Technical Tutorials on Monday 20th and Tuesday 21st May, followed by the main conference on Wednesday 22nd to Friday 24th May.

A pre-conference registration pack containing detailed information will be issued in February, 1991.

Call for Papers

The EUUG invites papers from those wishing to present their work. Full papers or extended abstracts must be submitted. All submitted papers will be referred to be judged with respect to their quality, originality and relevance.

Suggested subject areas include, but are not limited to:

- ★ *The Applicability of Distributed Open Systems*
- ★ *Security*
- ★ *Reliability*
- ★ *Transparency*
- ★ *Interoperability*

- ★ *Distributed Applications*
- ★ *Tools*
- ★ *Heterogenous Distributed Environments*
- ★ *Distributed Databases*
- ★ *User Interfaces in Distributed Environments*

For further details, contact:

EUUG Central office:

European Unix[®] systems User Group

Owles Hall, Buntingford, Herts SG9 9PL, UK.

Phone: (+ 44) 763 73039 Fax: (+ 44) 763 73255 Network Address: euug@Eu.net

Tenth International Conference on Computer Communication New Delhi, India, November 4-8, 1990

ICCC-90 is the tenth conference of the International Council for Computer Communication (ICCC). ICCC-90 will provide an important and prestigious forum for presentation, discussion and debate. Topics discussed will include all aspects of computer communication, including technical, scientific, social, policy making, business and legal aspects.

The topics for approximately 90 papers to be presented include:

- *Communication aspects of: Distributed Operating Systems, Expert Systems, Office and Factory Information Systems, Robotics, Security and Privacy, Standards, Videotext, Work Stations

- *Electronic Funds Transfer, Human Factors, Legal Aspects, Regulatory Issues

- *Data Communication in ISDN, Optical Data Transmission and Switching, Packet Radio,

Protocol Specification and Verification, Protocol Conversion, Satellite Data Communication

- *Academic Networks, Corporate Networks, Local Area Networks, Networks Management and Operation, Packet Switching, Open Systems Interconnection (OSI)

For further information, registration etc., please contact

S. Ramani

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2.10.1BSD Release Available

The second release of 2.10BSD is available. It has been designated 2.10.1. Although the changes are fairly simple to describe, they cover large portions of the distribution. Most will not be visible to either users or administrators; specifically, no recompilation is necessary. Administrators should be aware that the 4.3BSD disk quota system is now available. Due to address space considerations, however, it is expensive to run. Also, the source for the on-line manual pages has been rearranged as per the 4.3BSD-Tahoe release.

The major change, and the reason for the second release, is an extensive reworking of the kernel to move the networking into supervisor space. This move eliminated most, if not all, of the instabilities seen in the original networking provided with 2.10BSD; it also doubled the speed of, for example, file transfer. As encouragement to sites that encountered difficulties in using the networking in the first release, or encounter difficulties in this release, we have beta sites that have been running for months without crashing, as well as sites with fifty nodes. We are, however, still suspicious of the DEQNA driver . . .

In application land, many missing pieces of the 4BSD distribution have been added, most notably the FORTRAN compiler and library and the line printer sub-system. Many other programs have had minor (and not-so-minor) fixes applied.

Keith Bostic
Casey Leedom

Because the changes to the kernel are major, no "upgrade" tape will be available. 2.10.1 BSD is only available as source, to appropriate licensees of V7, System III, System V, or 2.9BSD. The cost is \$200, prepaid.

The release consists of two 2400 foot, 1600 BPI tapes (approximately 80Mb) and approximately 100 pages of documentation. If you require 800 BPI tapes, please contact USENIX. To order 2.10.1 contact the USENIX Association, Tel: 415 528-8649, EMail: office@usenix.org.

If you have technical questions about the release, please contact Keith Bostic at: keith@okeeffe.berkeley.edu 415 642-4948.

NOTE: There are a few copies of 2.9BSD available. If you do not have split I&D and want to run UNIX on your PDP-11/x, contact USENIX.

Long-Term Calendar of UNIX Events[†]

| | | |
|-------------------|---------------------------------|-----------------------------------|
| 1990 Oct 17-19 | *Large Installation Sys. Admin. | Colorado Springs, CO |
| 1990 Oct 22-26 | EUUG | Nice, France |
| 1990 Oct 29-Nov 2 | Soviet UNIX Users' Group | Moscow, USSR |
| 1990 Oct 31-Nov 1 | UNIX Expo | New York, NY |
| 1990 Nov 5-9 | Computer Communication Conf. | ICCC; New Delhi, India |
| 1990 Nov 8 | Open Systems, NLUUG | Ede, Netherlands |
| 1990 Nov 14-16 | UNIX EXPO '90 UniForum | Stockholm, Sweden |
| 1990 Nov 15 | POSIX APP Workshop | NIST; Gaithersburg, MD |
| 1990 Nov 15-16 | 16th JUS Symposium | Osaka, Japan |
| 1990 Dec 2-6 | Sun User Group | San Jose, CA |
| 1990 Dec 4-5 | JUS UNIX Fair '90 | Tokyo, Japan |
| 1990 Dec 10-12 | UNIX Asia '90 | Sinix, Singapore |
| 1990 Dec 10-14 | DECUS | Las Vegas, NV |
| 1990 Dec 17-19 | UKUUG | Cambridge, UK |
| 1991 Jan 7-11 | IEEE 1003 | New Orleans, LA |
| 1991 Jan 16-18 | *Software Devel. Environments | Grand Kempinski, Dallas, TX |
| 1991 Jan 21-25 | USENIX | Grand Kempinski, Dallas, TX |
| 1991 Jan 22-25 | UniForum | Infomart, Dallas, TX |
| 1991 Feb 18-22 | DECUS | Ottawa, Ont. |
| 1991 Mar 21-22 | *Symp. Distrib. Multiproc. Sys. | Atlanta, GA |
| 1991 Apr 15-19 | IEEE 1003 | Chicago, IL |
| 1991 Apr 22-25 | USENIX C++ | Washington, D.C. |
| 1991 May 6-10 | DECUS | Atlanta, GA |
| 1991 May 15-17 | IEEE TCOS Cptr Workstations | Falmouth, MA |
| 1991 May 20-24 | EUUG | Tromso, Norway |
| 1991 Jun 10-14 | USENIX | Opryland, Nashville, TN |
| 1991 Jun 16-19 | Sun User Group | Atlanta, GA |
| 1991 Jul 8-12 | IEEE 1003 | |
| 1991 Jul 15-17 | UKUUG | Liverpool, UK |
| 1991 Sep 16-20 | EUUG | Budapest, Hungary |
| 1991 Oct 21-25 | IEEE 1003 | |
| 1991 Dec | UKUUG | Edinburgh, UK |
| 1991 Dec 8-11 | Sun User Group | San Jose, CA |
| 1991 Dec 9-13 | DECUS | Anaheim, CA |
| 1992 Jan 13-17 | IEEE 1003 | |
| 1992 Jan 20-24 | USENIX | Hilton Square, San Francisco, CA |
| 1992 Jan 21-24 | UniForum | Moscone Center, San Francisco, CA |
| 1992 Spring | EUUG | Jersey, UK |
| 1992 Apr 20-24 | IEEE 1003 | |
| 1992 May 4-8 | DECUS | Atlanta, GA |
| 1992 Jun 8-12 | USENIX | San Antonio, TX |
| 1992 Jun 21-24 | Sun User Group | Washington, DC |
| 1992 Jul 13-17 | IEEE 1003 | |
| 1991 Autumn | EUUG | Amsterdam, Netherlands |
| 1992 Oct 19-23 | IEEE 1003 | |
| 1993 Jan 25-29 | USENIX | San Diego, CA |
| 1993 Mar 15-18 | UniForum | San Francisco, CA |
| 1993 Jun 21-25 | USENIX | Cincinnati, OH |

[†]Compiled with the assistance of Alain Williams of the EUUG, Susanne Smith of Windsound Consulting, and John Quarterman of Texas Internet Consulting.

*USENIX Workshops

USENIX Staff Changes

Beginning this Fall, the Association will no longer have an office in Boulder, Colorado. John Donnelly, the Exhibit Manager and Tutorial Coordinator, has decided to pursue other interests. Michael McLaughlin, his assistant, will be returning to his studies at the university full-time. John will be consulting in the seminar planning, exhibit management and meeting planning arenas. He can be reached at 858 Pimlico Court, Boulder, CO 80303; Tel: 303-494-8495 or 303-494-2607; email: johnd@boulder.colorado.edu.

The functions previously handled by the Boulder office will now be performed by two individuals. The Association is pleased to announce that it has hired Daniel Klein as its Tutorial Coordinator and Cynthia Deno as Exhibit Manager.

As many of you are aware, Dan has been very active in the Association, both as a tutorial speaker and as the program chairman for the Winter '90 technical conference. Dan is currently employed by the Software Engineering Institute in Pittsburgh. The tutorial program has become an important feature of the USENIX conferences and offers a leading edge forum for educating UNIX professionals. Dan is actively seeking new topics and speakers, and an announcement will appear in the next issue of *;login:*. He can also be reached via email: dvk@usenix.org.

Cynthia Deno has many years of experience in conducting large-scale direct mail and managing journal publishing programs. She was most recently direct mail manager at ETR Associates in Scotts Valley, CA where she planned publications sales and conference promotion campaigns. Prior to this she has many years of experience in marketing and project management with such firms as Springer-Verlag, Academic Press and the University of California Press. Cynthia's overall marketing and organizational experience will be a welcome addition to the management of the Association's conferences. She is actively seeking exhibitors for the Summer 1991 Conference and Exhibition. If you or your company would like information on demonstrating your latest products to the USENIX community, please contact our Exhibit Manager either by email: cynthia@usenix.org or phone: 408-335-5646.

If you've phoned the USENIX Conference office lately, you'll notice a new voice, namely, Bernie Grunewald. She previously was an office manager for a high tech computer company. Bernie, as well as Marilyn Alleman, assist our conference coordinator, Judy DesHarnais, in fielding your questions concerning upcoming conferences and workshops, as well as providing support at the meetings.

Computing Systems Special Issue

If you were paid up member as of May 1990, you should have just received *Computing Systems* volume 3, number 2. This issue is accompanied by a compact disc which includes both classical repertoire and original works.

The music on the CD was created by Michael Hawley at the MIT Media Laboratory and Peter Langston while he was at Bellcore. Pieces include "Empty Bed Blues" by Johnson, "Some Velvet

Morning" by Lee Hazelwood, Liszt's "Toten-tanz" played by Jorge Bolet and the London Symphony Orchestra, and "Percusa Waltz" by Peter Langston.

Single copies, including the CD, are available for \$11.00. To place an order, contact the University of California Press, 2120 Berkeley Way, Berkeley, CA 94720, 415/642-4191.

Report to USENIX and EUUG on ISO/IEC JTC1/SC22/WG15 (POSIX) Meeting

June 11–15, 1990

Dominic Dunlop

The Standard Answer Ltd.

Introduction

Working Group 15 of Subcommittee 22 of Joint Technical Committee 1 of the International Organization for Standardization and the International Electrotechnical Commission (ISO/IEC JTC1/SC22/WG15), or, more briefly, the ISO POSIX working group, met in Paris, France, from the 12th to the 15th of June. The meeting was hosted by AFNOR, (Association française de normalisation), the French national standards body, at its offices in La Défense, a high-rise business district a brisk train-ride away from the city centre, and was preceded on 11th June and the morning of the 12th by meetings of the rapporteur groups on conformance testing, internationalization and security. Attendance was good, with thirty “experts” (as the *ISO Directives* style us) representing nine countries, plus the European Community.

I was present at the main meeting and at the internationalization rapporteur group as an observer with the brief of reporting back to you. This report is the fourth jointly commissioned by the European UNIX systems User Group (EUUG) and USENIX. As usual, it’s a little imprecise in its references to ISO. Strictly, most of these should be to JTC1, or to some part of JTC1. Where precision is needed, I use it and give an explanation, but for the most part I refer simply to ISO, so as to avoid getting bogged down in unnecessary detail. If you have any comments, or need clarification or further information, please contact me at the mail address above.

First, a summary of the most important aspects of the meeting:

Summary

- POSIX.1, the operating system interface standard, should be published as international standard 9945-1 Real Soon Now. As I write, the ballot on the document has yet to close, but it

seems unlikely that any of the twenty countries voting will oppose acceptance. The meeting identified a number of trivial editorial changes to the current draft international standard, and these, taken together with continuing nit-picking comments from ISO’s central secretariat, should result in a document which ISO will print. Its technical content will be very close to that of ANSI/IEEE Std. 1003.1:1988, so implementors following the U.S. standard can be assured of ISO compliance when 9945-1 finally sees the light of day.

- POSIX.2, the shell and tools standard, faces a bumpier ride before becoming international standard 9945-2. In an ISO ballot on acceptance of draft 9 of IEEE 1003.2 as a draft international standard, six countries voted against, with just five in favour. This is more of an embarrassment than a set-back: hindsight suggests that it was just too early to hold a ballot.

- Showing its increasing concern and frustration at the lack of apparent progress within the IEEE on a (programming) language-independent version of the POSIX operating system interface standard, WG15 has refused to “register” the current, largely language-independent, draft of the 1003.4 realtime extension standard on the grounds that it makes little sense to have language-independent extensions to a base standard which is specified in terms of the C language. Similarly, the group failed to register 1003.5 (Ada binding) and 1003.9 (FORTRAN-77 binding) because POSIX.1 lacks an explicit service definition to which they can bind.

- The failure to register these documents causes a hiccup—albeit a discreet one—in the synchronization between IEEE and ISO POSIX standardization schedules. In the hope of avoiding such situations in the future, an informal “speak now, or forever hold your peace” mechanism has been put in place, allowing the international community to comment on the subject area, format,

presentation and approach of IEEE documents at an early stage in their preparation.

- Had it not been for this upset, the working group would have adopted a firm synchronization plan so as to ensure that the work of IEEE and of ISO is closely coordinated in the future. As it is, the “U.S. member body”—ANSI—has been asked to provide a revised plan for the working group’s October meeting in Seattle.

- The Open Software Foundation, UNIX International and X/Open are cooperating on a common approach to conformance testing, known as Phoenix. Governmental organizations with a strong interest in the field, such as the National Institute for Science and Technology (NIST) and the Commission of European Communities (CEC), seem broadly to welcome this move—even if the unaccustomed show of tripartite unity is, as one security rapporteur put it, “a bit spooky”.

- At an evening reception hosted by AFUU (Association française des utilisateurs d’UNIX), the French UNIX users’ group, Mike Lambert of X/Open said that “our hand is extended” to the international standardization community, with which his organization hopes to work in finding some more timely and responsive way of delivering formal consensus standards for open systems. The definition of this mechanism is left as an exercise for the reader—or for the international standards community. Perhaps Mike has come to realize that standardizers too are prone to the Not Invented Here syndrome, and so must believe that they thought of something themselves before they can accept it.

- Just to keep us all on our toes, ISO has updated its Directives, with the result that the procedure for turning a base document—such as one of the IEEE drafts—into an international standard is subtly changed. We now have to forget about Draft Proposals, and turn our minds instead to Working Drafts and Committee Drafts. Sigh

The rest of this report gives more detail most of these topics.

9945-1—Operating System Interface

You may recall from my report of WG15’s last meeting in October, 1989, that the group had

in effect told ISO’s central secretariat that, while the then-current draft of IS 9945-1 was not perfect, it was, in the group’s opinion, good enough to publish, particularly since we’d undertake to fix things up on short order, allowing an improved version to be published within a year of the first edition.

This proposal did not fly. Firstly, the central secretariat (now dynamically known as ITTF, the Information Technology Task Force), refused to publish a document that looked much more like an IEEE standard than an ISO standard; secondly, they deemed the changes needed to polish up the draft to be sufficiently great that it should go out to ballot again in order to provide a formal check that it was still acceptable to the group. This was duly done; the ballot closed on 29th June, and is expected to pass very comfortably.

Nevertheless, the ballot gave people the opportunity to comment formally on the document again, with the result that a number of small bug-fixes and clarifications were suggested, and were accepted for incorporation into the draft. We judge—and we hope that ITTF agrees—the changes are strictly editorial, and so will not merit yet another ballot. ITTF, which, in discussion with the IEEE, had slightly bent its drafting and presentation rules so as to come up with a compromise satisfactory to both parties, also suggested further changes, some in areas that we thought had already been addressed. This is a cause for concern: the prospect of the standard never being published because its layout and language do not meet some ill-defined guidelines does not appeal. Consequently, we are seeking “written harmonized editorial requirements” from the IEEE and ITTF.

The ballot also produced a number of suggestions in the area of internationalization, such as how to handle (and indeed, how to refer to) wide, or multi-byte, characters. To have acted on these comments would have changed the technical content of the draft standard—the equivalent of sliding down a snake in the game that leads to eventual publication. Happily, those who suggested the changes were content to leave these issues for the second edition of the standard, rather than further delay the first edition.

The single exception that we could get away with was to replace Annex E's¹ example international profile for the hypothetical (and extremely odd) land of Poz with a real example for the (only slightly odd) country of Denmark. Although this is a large change, it can be made because the annex (ISO-speak for appendix) is "non-normative"; that is, it is an explanatory example rather than a part of the official standard.

Messaging, an issue which is currently exercising the minds of those concerned with the next edition of the 1003.1 standard^[1], was also passed over by WG15: nobody had a strong preference for either the X/Open proposal or the UniForum proposal, so 1003.1 will have to handle the issue without guidance from the ISO working group.

Where all does this leave us? With no published international standard as yet, but with a very good prospect of having one this year. Until it arrives, keep using the bilious green book, IEEE std. 1003.1:1988², as its technical content is very close to that of the eventual ISO standard.

9945-2—Shell and Tools

Earlier in the year, there had been a ballot on moving forward draft proposal (DP) 9945-2, *Shell and utility application interface for computer operating system environments*, to become a draft international standard (DIS). Basically, while a DP is allowed—even expected—to differ considerably from the final international standard, a DIS is expected to match both the format and contents of the ultimate standard very closely³. That the ballot was six against to just five for (with nine countries not voting) indicates that the consensus is that 9945-2 has to go through quite a few more changes before it can be acceptable as an international standard.

Many of these changes concern internationalization, as this topic affects POSIX.2 considerably more than POSIX.1. For example, the example Danish national profile to be incorporated into 9945-1 is just a part of the work that DS (Dansk Standardiseringsråd) has done on the topic; the result affects 9945-2. There is also an unresolved issue concerning the definition of collation sequences (sorting orders) for international character sets. Utilities such as *sort* clearly need to know about collation sequence, and so do the

regular expression-handling utilities and functions defined by POSIX.2. The problem is that nobody in ISO seems to want to handle the matter. In particular, JTC1/SC2, which standardizes coded character sets, sees its job as assigning codes to characters, not as saying anything about how those codes should sort⁴. This is a reasonable attitude: collation is a surprisingly complex field, and to attempt to cover it in coded character set standards would break the ISO rule of one topic, one standard. This is all very well, but 9945-2 needs somebody to do the work, and WG15 may end up doing it itself if pleas for help from elsewhere in ISO fail.

More work is on the way: 1003.2a, the User Portability Extension to POSIX.2, was registered for ballot as a Proposed Draft Amendment (PDAM) to DP 9945-2, giving the international community a chance to say what it thinks of the idea of standardizing interactive commands such as *vi* and language processors like *cc*—or rather *c89*.

Coordination

The coordination arrangements which will make IEEE and ISO work on POSIX march forward in lock-step were almost complete before the small international rebellion on the matter of language independence made us stumble. (See below.) Because WG15 failed to register 1003.4, 1003.5 and 1003.9 at this meeting, the plan must be adjusted, although little slippage should result. We'll try to jump on board the revised plan at the next meeting.

1. This material is not in the published IEEE std. 1003.1:1988.

2. You can buy a copy by calling IEEE customer service on +1 908 981 1393 (1 800 678 IEEE inside the U.S.) and giving them a credit card number. The cost is \$37, plus \$4 for overseas surface mail, plus another \$15 for airmail. Alternatively, your national standards body may be able to sell you a copy. For example, BSI in the U.K. has them for sale at £24.

3. DP 9945-2 is the last that we will see; under the new directives, DPs are no more; they are replaced by working drafts (WDs), which become committee drafts (CDs) before becoming DISs. This is not a big deal.

4. For oblique confirmation from "the father of ASCII", see ^[2].

Internationalization

In the one and a half days before the main meeting of WG15, its three rapporteur groups met. I attended the internationalization meeting, which had a hectic time of it: as the only rapporteur group directly concerned with the current content of 9945-1 and -2, we had a lot of comments to sift through prior to the main meeting. This we did, by the skin of our teeth. Our conclusions are largely reflected in the actions on the two drafts, reported above.

Security

The security rapporteur group is just getting off the ground. As with internationalization, activities scattered throughout JTC1 have to do with security. But in contrast to the current situation for internationalization, for security there is a (very new) subcommittee, SC27. Conceivably, SC27 could define some all-encompassing ISO security model⁵ which would not suit POSIX and the work of 1003.6, which is eventually to be integrated into the 9945 standards. The rapporteur group is doing all that it can to prevent this from happening. Happily, ISO is already aware of the issue, and has formed a special working group on security, to which WG15 will be sending a representative.

Conformance Testing

The proceedings of the rapporteur group on conformance testing were rather overshadowed by the announcement of Project Phœnix. Quite from what ashes this has risen we did not learn; however, as it involves cooperation between the Open Software Foundation (OSF), UNIX International and X/Open, it is difficult to resist the temptation to speculate. But resist I shall . . .

The goal of Phœnix is to develop a common conformance testing suite and methodology for the three organizations, or, to put it another way, to harmonize their activities in this area. Harmonization of standards for open systems is an important issue for WG15 in general. The issue affects the rapporteur group on conformance testing in particular because the European Community and NIST are giving a high priority to accrediting test houses which can check conformance to open systems standards. This means that they need to ensure that uniform test

methods are being consistently applied. The rapporteur group will address this issue at its next meeting. In the mean time, WG15 has registered the current draft of the first part of 1003.3, which describes general test procedures, and we will review it before our next meeting—despite the fact that there is as yet no well-defined route by which POSIX.3 can become an international standard.

Language Independence

The issue of a making the POSIX standards independent of any particular computer language came to the fore at this meeting. What's all the fuss about? Well, ISO has firm—and, in my view, sensible—ideas about how to write standards which define the services available from information processing systems. Building on the doctrine that one standard should address just one topic, there should be, says ISO, one document defining the service, and one or more documents describing ways of accessing that service. For example, a browse through the open systems interconnection standards reveals several groupings such as IS 8072, *Transport Service Definition* and IS 8073, *Connection oriented transport protocol specification*; and IS 8649, *Service definition for the Association Control Service Element*, and IS 8650, *Protocol specification for the Association Control Service Element*⁶. Similarly, in text communication, there is IS 9066-1, *Reliable transfer—model and service definition* and IS 9066-2, *Reliable transfer—protocol specification*, and in graphics, IS 7942, *Graphical Kernel System functional description* and IS 8651-1 through -3 giving GKS language bindings for FORTRAN, Pascal and Ada. (8651-4, giving bindings for C, is in the works.)

POSIX, ISO has ordained, must eventually go along with this model, with the result that IS 9945-1, -2, and -3 (Operating system interface, shell and utilities, and administration respectively) will be concerned simply with defining services, and will not be bound to any particular

5. ISO likes models, and they're not without their uses. Work on a useful model for open systems is under way in several forums.

6. Browsing through OSI standards may be a cure for insomnia. On the other hand, it may aggravate hypertension . . .

programming language. The key word here is “eventually”: because of the pressing need for an international standard for POSIX, a waiver has been granted, allowing the first version of the 9945-1 and -2 standards to be a combination of (purists might say “a collision between”) a service definition and a C language binding to those services. The expectation is that a future revised new edition of each standard will be language-independent, and that bindings for the C language will be published as a separate standard at the same time⁷.

So far, so good. But this is where the problems start. While this mandated future appears a long way off if one looks at the IEEE’s work on POSIX.1, it seems very close when POSIX.4 (realtime extensions), POSIX.5 (Ada bindings) and POSIX.9 (FORTRAN-77 bindings) are considered. In the case of POSIX.4, language-independent extensions are being proposed for a standard which is not itself (yet) language-independent. And POSIX.5 and POSIX.9 define bindings to a set of services which is not explicitly defined, but rather is defined implicitly in terms of the binding to the C language given in POSIX.1. In the absence of a clear service definition, it is no surprise that, for good reasons which have to do with their respective languages, the Ada, C and FORTRAN versions of the operating system interface appear currently to be binding to slightly different sets of services.

To some, the whole issue of language independence seems like an unnecessary and irksome imposition by ISO. In a recent posting to comp.std.unix^[3], Doug Gwyn wrote:

[Those of us who worked on 1003.1] did NOT set out to create a language-independent standard; C was specifically chosen for the obvious reason that it was the SOLE appropriate language for systems-level programming on UNIX, for a variety of reasons, including the fact that the UNIX kernel has a marked preference for being fed C data types.

7. Under ISO’s procedures, the bindings standards for POSIX will be allocated an ISO standard number just as soon as we register a base document for one of them. Until that happens, I shall have to refer to “future bindings standards”, rather than having a convenient number to use as a handle.

It is certainly true that, because, back in 1985, all the base documents for the IEEE POSIX work were written in terms of a C language interface, the working group made a good pragmatic decision to produce a standard centered on C. A different decision would have resulted in the standard which took longer to get out of the door, and which would not have been any more useful to its primary audience—committed UNIX users concerned with the divergence among implementations of their chosen operating system. But the success of UNIX and of its offspring, POSIX, has greatly widened the audience for the standard. Whether we like it or not, ISO has revisited the original decision so as to ensure that the international standards for POSIX meet the needs of this new audience. As a result (to continue quoting from ^[3]):

This “language binding” nonsense was foisted off on P1003 in an attempt to meet ISO guidelines. I think it must have been adopted by ISO as the result of Pascal types insisting that they never have to use any other language.

Countering this, I would contend that, while the number of “Pascal types” is too small for their opinion to be of prime concern, the number of FORTRAN types, COBOL types and perhaps even of Ada types is large enough that it would be at least polite to provide some well-defined means whereby these communities can create bindings which allow them to hook into POSIX services without having to learn a new programming language. In the future, the growing C++ community may decide to define the interface to POSIX services in an object-oriented manner; Steve Carter paid us a flying visit with news from the ANSI X3J16 C++ committee in order to open up channels of communication.

Consider another topic which has come to the fore as POSIX has moved into the international arena: internationalization—mechanisms which will allow non-English speakers to use POSIX-compliant systems without having to learn a new natural language. Like the current movement towards separating service definitions from bindings, this involves a considerable amount of work, yet does not appear to provide much that is of use to UNIX’ original community of technical users. Accommodating the preferences (prejudices?) of ever greater numbers of people is, it seems to me, part of the price of success for the UNIX oper-

ating system. And it may well pay dividends. For example, internationalization work on regular expressions and collating has resulted in facilities which will be of use even to English speakers.

Returning to the matter of the programming language used for bindings, it is true that AT&T-derived UNIX implementations prefer a diet of C data types. However, it certainly was an aim of 1003.1 to allow hosted POSIX implementations, which might well be riding on underlying operating systems with entirely different tastes. As a topical example, lightweight kernels such as Chorus and Mach live on messages, suggesting that their services could be bound to a data stream encoding⁸. I suspect that anybody who has tried to make *ioctl()* work across a network wishes that UNIX had anticipated their needs by following such a model from the start. But it didn't, and to redefine it in these terms would be a large piece of work which (thankfully) is a long way beyond the scope of WG15.

There is no way in which all such requirements could have been anticipated, and accommodating the most important of them as the need arises inevitably causes pain. Both language independence and internationalization are unanticipated requirements which the international community wants retrofitted to POSIX on short order. And it's ANSI, as provider of the base documents to ISO, and the IEEE, as the body accredited by ANSI to produce the documents, that get beat on to do the real work, and to suffer the pain.

In the view of WG15, the real work needed to make POSIX.1 a logical base for extensions such as POSIX.4, POSIX.5 and POSIX.9 is not being done fast enough. Trouble is, all standards are produced by volunteers—often volunteers who have had to make a case to their managers that there's some percentage in their company being involved in standards work. There is clearly an eventual percentage in language independence for suppliers of POSIX-conformant systems if it encourages users of languages not traditionally found on UNIX systems to migrate to POSIX. But sadly, while not in any way criticizing the quality of the work done to date, there aren't enough IEEE volunteers interested in recasting POSIX.1 into language-independent form.

Maybe, just maybe, if the international community is more interested than the U.S. in getting

this work done, WG15 should encourage more people from outside the U.S. to participate actively and directly in the work of the IEEE. (Or, to put it another way, encourage more organizations outside the U.S. to put their hands more deeply into their pockets in order to pay for people to attend IEEE POSIX working group meetings.) The alternative is that WG15 does the work itself—an alternative I'd rather not contemplate.

For now, two action items on ANSI from WG15 sum up the situation:

Pursue with vigour the production of a language-independent version of both 9945-1 and P1003.4 in conjunction with a C language binding for each in order that they are eligible as replacements for 9945-1:1990.

Request the IEEE to expedite the completion of the language independent specification of 9945-1 that is precisely functionally equivalent to the existing 9945-1:1990 and provide a C language binding that is syntactically and semantically identical; and request that a detailed proposal status report on this issue including a synchronization proposal be presented at the next meeting of WG15.

Next Meeting

The next meeting of WG15 is in Seattle from 23rd to 26th October—the week after the IEEE POSIX working group meeting in the same city (and the same week as the EUUG meeting in Nice, France⁹). Should be interesting!

REFERENCES

1. June, 1990 Standards Update, Jeffrey S. Haemer, comp.std.unix Volume 20, Number 66, USENIX, 30 June 1990
2. Letter from R. W. Bremer, pp 34–35, *Byte*, volume 15, number 6, June 1990
3. Doug Gwyn, comp.std.unix Volume 20, Number 51, USENET, 27 June 1990

8. More ISO-speak: broadly, if you have a protocol that lives above layer five (session) of the OSI stack, you'd better call it a data stream encoding. For example, the protocol for the X Window System™ is a data stream encoding by this definition.

9. In two meetings, WG15 has managed to clash both with summer USENIX and with autumn EUUG. It almost looks as if we do it on purpose! But we don't, and will try to do better next year . . .

An Update on UNIX and C Standards Activities

July and August, 1990

Jeffrey S. Haemer

Report Editor, USENIX Standards Watchdog Committee

Report on U.S. TAG to ISO/IEC JTC1 SC22 WG15

Susanne Smith <sws@calvin.wa.com> reports on the June 1 meeting in Denver, Colorado:

1. Overview

Before you ask, ISO/IEC JTC1 SC22 WG15 is ISO POSIX. The U.S. TAG is the United States Technical Advisory Group, which formulates the U.S. position on WG15 issues and chooses the U.S. delegation to WG15 meetings.

The TAG usually meets in conjunction with the IEEE POSIX meetings. The June 1 meeting was a special meeting, held to complete the many unfinished tasks left from Snowbird and ready the instructions to the U.S. delegation before the June 11 WG15 meeting.

2. Two vacant positions

Terry Dowling, vice-chair and security rapporteur, resigned after the New Orleans meeting in January. Currently there are no candidates for the vice-chair position. Donn Terry has been assuming the responsibilities in the interim.

A rapporteur group is a group of technical experts that discusses specialized aspects of a particular standards effort. The specialized aspects usually have a broader scope than an individual standard and require coordination of effort between standards bodies. WG15 has three: internationalization, security, and conformance. The TAG currently has rapporteurs for internationalization (Donn Terry) and conformance (Roger Martin). John Hill and Al Weaver said that they would be able to cover the June 11 security meetings in Paris.

Some important decisions from Snowbird

3.1 Profile groups get help

SC22 asked WG15 to develop a plan to help groups writing profiles. (A profile is an applica-

tion-area-specific set of pointers to standards. For example, P1003.10 is developing a supercomputing profile.) Wearing his WG15-convenor hat, Jim Isaak drafted and submitted a "POSIX Harmonization Proposal"—a plan that gives profile groups a way to observe WG15 meetings and participate when their proposals are being considered. The plan lists the responsibilities of both the "harmonization liaison" and WG15. The TAG approved the plan with comments, including changing "harmonization" to "coordination." [Editor: I think "harmonization" is ugly, but it does parallel the "MUSIC" acronym that's gaining ground in the UNIX, er, "Open Systems" arena.]

3.2 Speeding international approval

SC22 has asked all working groups doing development work in national bodies (for example, WG15 and IEEE P1003) to find a way to synchronize their national and international efforts. Such synchronization will help eliminate delays between national-body approval and ISO approval; it will also insure that both national and international bodies use the same text and speed achieving a broad consensus by circulating them in both bodies simultaneously.

Donn Terry, TAG chair, and Jim Isaak shouldered the burden of developing the plan and submitted it at Snowbird. The meat of the proposal is the following synchronization process:

- SC22 review and comment
- IEEE balloting; document ready for broad comment
- U.S. recommends CD registration be requested by WG15. (CD, Committee Document, is now used instead of DP Draft Proposal.)
- CD comments fed to IEEE balloting; IEEE recommendations fed to CD process
- IEEE final approval delayed until updated draft is suitable for DIS registration

- DIS and ANSI approval run in parallel; substantive feedback from DIS ballot creates an IEEE PAR

Final authority to approve or reject the plan rests with SC22 and the IEEE Computer Society Standards Activities Board, but the TAG voted “No with binding comments,” objecting to a few details. If the problems listed below are fixed, the vote will automatically change to “Yes.”

- Under the plan, TCOS/SEC documents, such as standards drafts and administrative status reports, would all be sent to WG15 and SC22 to encourage feedback before balloting. The plan would force TCOS working groups to use the JTC1 format for draft documents. Currently POSIX documents use a unique TCOS format, so the TAG objected to this requirement but added the comment that the format should be one approved by the ITTF (Information Technology Task Force, formerly, the “Central Secretariat”).

- The TAG also objected to the requirement that TCOS meet outside of the U.S. mainland every 12 to 18 months to encourage international participation. It did not object to meeting outside the U.S., but thought the requirement did not belong in the plan.

4. Decisions made in this meeting

4.1 Formatting nits still block ISO UNIX

The 9945-1 document (the ISO version of 1003.1) still has problems. WG15 recommended registering it as an International Standard (IS), but is now stuck in a loop: ISO demands a format change, the IEEE makes the change, then ISO finds a new formatting problem. The TAG thinks this loop has gone on long enough, and recommended that WG15 form an ad hoc committee to determine what ISO will accept.

4.2 P1003.1 updates go international

WG15 is balloting to make 9945-1.2 (which corresponds to 1003.1a, draft 5) a Draft International Standard (DIS). The TAG approved the U.S. position with comments. What’s that mean?

Voting within WG15 is done by member country. To arrive at the U.S.’s position on a WG15 ballot, the TAG members draft a position then vote on it, one vote per corporation. (POSIX participation, in contrast, is by individuals.) The

final ballot resolution is presented to WG15 as the U.S. position. Sometimes a voice vote suffices, but DISs, NPs (New Proposal, formerly New Work Item), or CDs (Committee Document, formerly Draft Proposal), require a letter ballot.

The initial letter-ballot vote was nine yesses, two noes (with comments), three abstentions; the two negative ballots were from Sun and AT&T. We considered three options for AT&T’s comments:

1. do nothing and write a response to AT&T explaining why,
2. pass the comments on to WG15, or
3. pass the comments on to the 1003.1 working group, who could better judge their technical merits.

We chose the third. In contrast, we incorporated Sun’s comment into our position. Though someone suggested that AT&T might not be getting fair treatment, Sun’s comment (which simply noted that a change made in chapter eight was not reflected in chapter two) was only a response to the TAG ballot, while the AT&T comments were more far-reaching responses to 9945-1.2 itself and demanded a different forum. Nevertheless, the group asked the ad hoc committee reforming TAG procedures to reconsider the ballot resolution process.

4.3 How can you be two places at once (when you’re . . .)?

In light of the amount of time TAG meetings keep members from attending working groups, we decided to meet Sundays before and Thursdays and Fridays during the POSIX meetings. This new schedule will start with the Seattle meeting in October. The idea is to complete as much as possible on Sunday and have Thursday and Friday available if necessary. We agreed that the TAG should allocate this much time to avoid one-day meetings like this one. The SEC meeting schedule may force this to change; several TAG members are TCOS officers, committee chairs, or Institutional Representatives, all of which are automatically SEC members.

4.4 Last, least

Both P1237 and X3T5.5 are working on remote procedure calls (RPC). X3T5.5 is specifying

the data stream encoding and P1237 is working on the Application Programming Interface (API). The TAG recommended that the API work be brought to the ISO level under the WG15 umbrella.

Report on USENIX Standards Birds of a Feather (BOF) Session

An anonymous correspondent reports on the June 12 meeting in Anaheim, California:

This snitch requests anonymity for several reasons, none of them related to his alcohol consumption during the BOF. The request actually relates to the snitch's employer—a standards organization. Because I am paid neither to file snitch reports nor to write opinions on standards, to submit this paper through normal channels for official, outside publication, even if it were entirely objective (or factual, for that matter), would require endless rounds of exhaustive, organizational review.

John Quarterman, of Texas Internet Consulting (TIC), and Susanne Smith, of Windsound, chaired the meeting, which was attended by about 40 people, including Larry Wall—nearly a standards body by himself. [Editor: Larry is the person responsible for such contributions to the community as `rn`, `patch`, and `perl`.] Jeff Haemer was absent because “his wife is having a baby any day and I just don't know where his priorities are!” [Editor: Zoe Elizabeth Haemer, 6lbs. 10oz., after a forty-five minute labor.]

Quarterman started out by covering who he is, how to reach him, and what he does. [Editor: Sounds like it would have been valuable for me to attend.] Smith pointed out that TIC and Windsound have collaborated on a calendar that includes all the latest dates of standards meetings. [Editor: You can request copies from tic@tic.com. They span July 1990–June 1991, and cost \$5.00, plus shipping, handling, and (Texans only) tax.]

They briefly reviewed standards efforts of interest to USENIX members, including P1003 (POSIX) and P1201 (Windowing). Quarterman discussed whose standard (ISO? ANSI? FIPS? other?) was most important but I was unable to

draw any conclusions or coherently summarize it, so I'll omit it here. Nonetheless he did get across two points: 1) there is a lot of coordination between groups and 2) he is very quotable. (“The IEEE standards board is baroque and byzantine.”)

After this basic informational introduction, the meeting was thrown open to the audience. The ensuing discussion was a mix of four things:

1. Humor

A couple of examples will give the flavor.

- An overheard conversation:

“Mach was the greatest intellectual fraud in the last ten years.”

“What about X?”

“I said intellectual.”

- The announcement of the new Weirdnix contest:

a contest for a correct interpretation of P1003.1 or .2 furthest from the original intent. The state of Utah is offering a trip for two to Salt Lake City for the winner.

2. Opinion polling

Quarterman tried to discern whether attendees thought they were being well-served by him, the USENIX Standards Watchdog Committee, and the USENIX position on standards: to attempt to prevent standards from prohibiting innovation. Indeed, at the April POSIX meeting, he was told that smaller companies don't like our participation because of this position. (For a more detailed discussion of the USENIX position on standards, see either *;login: 15(3):25* or the periodic overview posting in `comp.std.unix` about the USENIX Standards Watchdog Committee.)

Quarterman explained how USENIX came to its current policies and why it does not endorse standards of its own. Some audience members were unhappy with extant standards bodies and said they wouldn't mind if USENIX played a more active role. Smith reminded us that Unix Forum working groups, which she praised, play such a role. You are encouraged to let the USENIX Standards liaison and Board of Directors know what you believe their position on standards should be.

On a related note, BOF attendees were quite eager to be kept informed on standards issues. In this snitch's opinion, this is probably the standards-related area in which USENIX most excels, and its contribution overshadows that of any other source that this snitch is aware of. The USENIX Standards Watchdog Committee publishes copiously in both *;login:* and the usenet newsgroup comp.std.unix. Quarterman raised the possibility of breaking out the standards information of *;login:* into a separate publication.

Some attendees wanted increased coverage of standards currently outside of *;login:*'s bailiwick, such as RS-232 and CD-ROM format. Unfortunately, following any and all computer-related standards would exceed USENIX's budget and resources. [Editor: The alert reader will have noticed Andrew Hume's fine report on WORM-based file system standards last quarter. Send me a report. I'll edit it.]

Quarterman and Smith revealed that they are writing a book on UNIX-related standards (which will not be posted electronically). No suggestion was made for how it could stay up to date.

3. Government-bashing (Who is NIST and why are they so out of control?)

As soon as we determined that NIST wasn't represented in the room and couldn't defend itself, it became fair game. (There were no OSF reps either as their BOF ran concurrently with ours—but no one knew what OSF was doing so we skipped insulting them.)

Quarterman fanned the flames by giving an example where NIST had pushed too hard, in his opinion: System Administration. "Dot seven shouldn't exist," he said, but NIST pushed for it. Because government agencies view FIPS so favorably that a system administration FIPS would quickly become a de facto standard for non-government users as well, the IEEE said "ok, let's look at it."

Quarterman said things didn't turn out as badly as they could have. Unfortunately there is little common practice or prior art in the area; fortunately, dot seven is coming along so slowly that there may be by the time it is ready to go to ballot. Moreover, dot seven's work has encouraged several companies and universities to work

on the parallels between system administration and network management. Still, he reminded us that a standard should neither create nor innovate but only standardize, quoting Dennis Ritchie's compliment to X3J11 in his keynote address: "The C committee took something that wasn't broken, and tidied it up without breaking it."

The audience asked, "How do we control the activities of NIST?" NIST is a part of the government. If you are a U.S. citizen, your tax dollars fund it, so you can write your congressperson. While you can communicate directly with NIST's standards representatives, Quarterman asked that we not bug them in the name of USENIX, "because I have to work with these guys."

If you feel bold, you can actually talk to John Lyons, the director of NIST—<lyons@micf.nist.gov>—who lies midway between the scutpuppy standards reps and the demonically powerful congresscritters. He really does read and answer his email (and his signature does say that his opinions represent those of his organization).

Quarterman ended by defending, or at least rationalizing, NIST's pro-active stance: "The primary reason is money." A familiar example is the Air Force's AFCAC-251 RFP (Request For Purchase). This five-to-ten billion dollar request for SVR3-conforming systems created a heap of trouble by specifying a vendor brand name. After official protests, the procurement had to be reworded at great expense—ultimately to you, the taxpayer. A vendor-independent, POSIX FIPS would have prevented this.

One of the few questions Quarterman couldn't answer was, "Why did NBS change its name anyway?" This snitch scraped away at the dirt and uncovered the explanation:

The U.S. Department of Commerce under which NBS resides had wanted to change the name for many years because NBS has long performed activities quite unrelated to standards. As usual, it was politically bobbled for quite some time until a sufficiently obvious expansion of responsibilities came up for funding at which time (1/89, Reagan) the following announcement was issued:

The new name, "National Institute of Standards and Technology," reflects the broadened role and new responsibilities assigned to the agency which will include the traditional functions of

providing the measurements, calibrations, data, and quality assurance support to U.S. commerce and industry, together with several new programs to support the aggressive use of new technologies in American industry. NIST's new purpose is "to assist industry in the development of technology and procedures needed to improve quality, to modernize manufacturing processes, to ensure product reliability, manufacturability, functionality, and cost-effectiveness, and to facilitate the more rapid commercialization . . . of products based on new scientific discoveries."

Several new programs have been created aimed at rapid transfer of technology to U.S. industry. They are:

1. Regional Centers for the Transfer of Manufacturing Technology;
2. assistance to state technology programs;
3. the Advanced Technology Program; and
4. the Clearinghouse for State Technology Programs.

Call (301) 975-3058 (NIST Technical Information) if you would like more information on any of these programs or on NIST itself.

4. Get involved in standards!

This discussion went on for some time. UNIX is no longer guided by a few bright individuals; it is now in the hands of vested commercial interests, some of which don't care about innovation or good design.

For the most part, the committees themselves contain intelligent, well-meaning people who really want to create useful standards. But in a small committee, overlooked unintentional flaws can ruin otherwise good work. Snitches help forestall this by functioning as a community ear. If you don't have time to be on a committee, get on the mailing list and continue to read the newsgroups so you can comment on critical issues when they arise. If you don't, you have only yourself to blame if the standards come out all wrong.

Report on IEEE 1003.0: POSIX Guide

Kevin Lewis <klewis@gucci.dco.dec.com> reports on the July 16-20 meeting in Danvers, Massachusetts:

Dot Zero's rite of passage

For the first time in plenary, the group walked through the entire guide (221 pages), fine-tuning verbiage. This walk-through takes Dot Zero across a threshold: instead of soliciting content to fill up empty sections, we are now filtering the text. I'm proud we've gotten this far. I remember when we started this journey, virtually from scratch.

By the time we finished the walk-through, we had found that more structure and parameters were needed: rules to make our walk-throughs more productive. I ended my last report with the statement, "let's see if we have the self-discipline to get there." Here is where some of that self-discipline comes in. We'll see at the next meeting who abides by the rules we have agreed upon.

New Volunteers for OS and UI Sections

Two other good things happened in Danvers. Tricia Oberndorf is now in charge of the operating system section of the guide. Tricia is project leader for the Navy's Next Generation Computer Resources Operating System Software Working Group, which has chosen POSIX as its base standard. Heretofore, Jim Isaak had been the section leader.

Martha ("Marti") Sczcur (pronounced "see-zur"), from NASA, and Ruth Klein, from AT&T, have picked up the user interface section, which, up until the April meeting, had lain untouched for almost two years. These are welcome resources. Both of these welcome volunteers made significant contributions to the user-interface section of the recently published draft 8—contributions woefully lacking in draft 7.

What Will We Cut and What's a Profile?

In my last report, I stated that Dot Zero still faced hard decisions in two areas: guide content and profiles. I think guide content questions will resolve themselves as we move toward the mock ballot. Deadlines, like moving your household, have a tendency to make you throw away stuff that you otherwise might have kept. Given our goal of an early 1991 mock ballot, I think we will see a change in our "pack rat" mentality.

You might be wondering what will be on the editing-room floor. I can offer two sections: Data

Interchange and Graphics, whose demise might come about due to a lack of interest by anyone in the committee to contribute to them and move them along. There also seems to be a lot of redundancy. Good examples of this are the sections I am responsible for: Introduction and Scope. The guide seems to say the same thing in each of these sections but struggles to make it sound different. The fine tuning efforts will root this out.

We're still debating profiles, but a consensus is forming around the term POSIX profile. Dot Zero agrees we must define such a profile, but its elements still elude us. (This gets into the debate about whether a "true" POSIX profile needs to include 1003.1. Right now, there is only one POSIX standard, and it would seem to make sense that a POSIX profile should include it. However, there are convincing arguments to the contrary, such as a profile that specifies 1003.2 (shell and tools) compliance on DOS machines, which cannot support 1003.1. I think POSIX profiles should include some POSIX standard, but not any specific one.) Also, should Dot Zero make mandatory rules for profile writers, or just offer basic guidelines? These two topics will serve as the focus for much of our discussion in the October meeting.

For uniform resolution of our debates about profiles, we will meet and coordinate with representatives of the other working groups, particularly the profile groups. (Right now, that's real-time, supercomputing, multiprocessing, and transaction processing.) This will also help ensure that we hear all issues and key points of view. The primary debate focuses on whether Dot Zero should attempt to put "teeth" into the guide. Does Dot Zero, because of its goal in providing guidance to profile writers, have any say about the legitimacy of current or future profiling efforts? How extensive should this guidance be? How does Dot Zero provide guidance in an area where it lacks technical expertise? These kinds of questions frame the debate. [Editor: What do you think the answers are to these questions? Speak up. If you don't go, and don't have anyone else to tell, at least tell Kevin.]

Report on IEEE 1003.4: Real-time Extensions

Rick Greer <rick@ism.isc.com> reports on the July 16-20 meeting in Danvers, Massachusetts:

Most of the action in the July dot four meeting centered around threads. The current threads draft (1003.4a) came very close to going to ballot. An overwhelming majority of those present voted to send the draft to ballot, but there were enough complaints from the dot fourteen people (that's multiprocessing—MP) about the scheduling chapter to hold it back for another three months. Volunteers from dot fourteen have agreed to work on the scheduling sections so that the draft can go to ballot after the next meeting in October.

Actually, dot four voted to send the draft to ballot after that meeting in any case, and the resolution was worded in such a way that a consensus would be required to prevent the draft from going to ballot in October. Thus, the MP folks have this one final chance to clean up the stuff that's bothering them—if it isn't fixed by October, it will have to be fixed in balloting. Some of us in dot fourteen felt the best way to fix the thread scheduling stuff was via ballot objection anyway. Unfortunately, the threads balloting group is now officially closed, and a number of MP people saw this as their last chance to make a contribution to the threads effort. The members of dot fourteen weren't the only ones to be taken by surprise by the closure of the threads balloting group. It seems that many felt that it would be a cold day in hell before threads made it to ballot and weren't following the progress of dot four all that closely. [Editor: I've bet John Gertwagen a beer that threads will finish balloting before the rest of dot four. The bet's a long way from being decided, but I still think I'll get my beer.]

Meanwhile, the ballot resolution process continues for the rest of dot four, albeit rather slowly. There are a number of problems here, the biggest being lack of resources. In general, people would much rather argue about threads than deal with the day-to-day grunt work associated with the IEEE standards process. [Editor: The meeting will be in Seattle, Washington. Go. Be a resource.] Many of the technical reviewers have yet to get started on their sections. Nevertheless, proposed resolutions to a number of objections were presented and accepted at the Danvers meeting.

[Editor: Rick is temporarily unavailable, but Simon Patience of the OSF has kindly supplied these examples:

The resolved objections were taken from the CRB: replacing the event mechanism by "fixed" signals, replacing the shared memory mechanism by `mmap()` and removing semaphore handles from the file system name space. Replacing events by signals was accepted; no problem here. Adopting `mmap()` got a mixed reception, partly because some people thought you had to take all of `mmap()`, where a subset might suffice. The final vote on this was not to ask the reviewer to adopt `mmap()`, which may not satisfy the objectors. I'd guess the balloting group will eventually hold sway here! Finally, the group accepted abandoning the use of file descriptors for semaphore handles, but some participants wanted to keep semaphore names pathnames. The reviewer was sent off to rethink the implications of this suggestion.]

We should be seeing a lot more of this in Seattle. Similar comments apply to the real-time profile (AEP) work. The AEP group made more progress over the last three months than the technical reviewers did, although even that (the AEP progress) was less than I'd hoped. We're expecting our first official AEP draft in October.

Report on IEEE 1003.10 and 1003.15: Supercomputing and Batch

An anonymous correspondent reports on the July 16–20 meeting in Danvers, Massachusetts:

P1003.10 Supercomputing AEP

Scope synopsis: write an Application Environment Profile (AEP) for supercomputing, and work with other POSIX groups to define additional interfaces where required.

What an AEP is and what it must contain are still under development—making it impossible to know when the work will go to ballot. POSIX.10 met two separate times in Danvers with POSIX.0 (which is writing a "guide for profile writers") and other profile groups.

While we all agree that a profile is a list of standards, other aspects are unclear. For example, it was asserted previously that AEPs must be ISO Standardized Profiles (ISP), but it was sug-

gested in July that there may be a POSIX Standardized Profile (PSP), or maybe a Preliminary PSP (PPSP).

POSIX.0 is also undecided about whether an AEP should contain conformance testing information, or what might comprise such information. If extensive conformance testing is required for the 50-plus standards cited in the current POSIX.10 draft, the effort could take many years.

Whatever the decisions, the progress POSIX.0 and ISO make in defining an AEP is the upper bound on the progress any profile group can achieve.

In Danvers, POSIX.10 looked again at the numerical accuracy issues, including a proposal to ANSI X3T2 from DEC called a Language-Compatible Arithmetic Standard (LCAS), which may or may not be useful to supercomputing. POSIX.10 will request formal liaison with X3T2 to ensure that we keep current with developments in this area. The conflict between portability and performance improvements from proprietary formats is not easy to resolve, but is of paramount interest to numerical, supercomputing applications. This issue will not go away, though it may be impossible for the first release of this profile to make any meaningful statements about it.

This working group also discussed Jim Isaak's article, "Application Environment Profiles: a Significant Tool for Simplification and Coordination of the Standards Efforts" (IEEE Computer, February 1990). Not only must profiles be complete, says Jim, they must be coherent. A profile may need to act like a glue, specifying not just lists of standards, but interactions of different standards on a single system.

The working group will put all the standards it cites into a triangular matrix to identify potential interactions. As each interaction is identified, the group will examine the effects on coherence by looking more closely at parameters, options, and behaviors, to determine if additional interface standards are required.

POSIX.10 must also pass proposals for standards extensions on to other working groups. A proposal for an Application Program Interface (API) for checkpoint and restart has been submitted to POSIX.1; they returned it with a request for substantial modification, but this writer

understood them to agree that they will polish and ballot the interface. A proposal for a resource-limits API is also in preparation, and will be discussed further at the next meeting. Proposals for a resource reservation system, a removable/non-sharable media system (nine-track tape, cartridge tape, CD-ROM, etc.), and resource accounting also need to be done.

These interfaces need to be done soon, because the batch group (POSIX.15) needs the underlying functionality to support batch processing.

P1003.15 Supercomputing Batch Extensions

Scope synopsis: define API, user commands and system administration commands for a networked batch queueing system; current draft is based on NQS sold by COSMIC at Univ. of Ga.

POSIX.15 has the same chair as POSIX.10 (Karen Sheaffer from Sandia Livermore), but now has a separate vice chair and secretary. The group has grown to 15–20 regular participants in the batch discussions, and now includes active participation by more vendors.

Their latest draft is very close to the page layout of the other POSIX documents, which is important for acceptance by the other groups. Jim Isaak spoke to the group in Danvers, and helped them to understand the balloting process and the relation of their Program Authorization Request (PAR) both to their own efforts and to the efforts of other groups.

A very important and thorny issue for this group is the definition of a host-to-host request/reply protocol. In the first place, there are no other POSIX host-to-host protocols that this group can use as a model for how to write its spec. Secondly, numerous participants are dissatisfied with the NQS protocol: it simply doesn't carry enough information. HP, in particular, is working very hard to ensure that the load balancing aspects of their Task Broker system are not excluded by anything in the batch standard, and for that they need more information to be exchanged between hosts.

Another problem facing this group is the lack of an API for resource limits, resource reservation, and resource accounting beyond basic UNIX accounting. Based on the balloting in POSIX.2,

they can expect balloting objections against statements in their document which refer to these features until the interfaces are in place.

Just before the close of the meeting, a representative of POSIX.7 presented some questions about the current direction of the batch effort and its relation to the Palladium print system (the Athena print system used at MIT). Many current NQS sites queue print requests with NQS, and there has been some interest in defining printing features. That function, however, is clearly within POSIX.7's scope. It is reasonable for POSIX.7 to question if and how Palladium and NQS are compatible.

POSIX.15 meets eight times a year, with interim meetings about midway between the quarterly POSIX meetings. It would be in their interest to publicize these meetings, and to arrange them through the IEEE. (Following the October POSIX meeting, there will be one December 4–6 in Huntsville, AL hosted by Intergraph.)

There is reason to be optimistic about the progress of this group. Although they've only been an official POSIX group for one meeting, they are showing an increased sensitivity to the political issues involved in getting their document through balloting. I think their biggest liability right now is their determination to go to ballot in January 1991. The date seems premature by a year or more; they need more meetings before balloting so more people can read and comment on their draft.

ERRATA

On page 53 of the July/August 1990 issue of *;login*: it was stated that the problem with compress is that the algorithm is copyrighted. A reader (Mike Stump) pointed out that the problem is that there is a patent on the algorithm.

—JSH

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Educational and governmental institutions:

Brent Auernheimer (209) 294-4373
brent@CSUFresno.edu or csufres!brent

Commercial institutions or individuals:

Gordon Crumal (209) 875-8755
csufres!gordon (209) 298-8393

CA - Irvine: the UNIX Users Association of Southern California meets the 2nd Monday of each month.

Rich Bergstedt, AT&T (714) 727-5231
 8001 Irvine Center Dr., Suite 224
 Irvine, CA 92718-2900

UUASC Information Line (714) 727-5232

CO - Boulder: the Front Range UNIX Users Group meets monthly at different sites.

Steve Gaede gaede@sda.com
 Software Design & Analysis (303) 499-4782
 P.O. Box 3521
 Boulder, CO 80303

FL - Coral Springs:

S. Shaw McQuinn (305) 344-8686
 8557 W. Sample Road
 Coral Springs, FL 33065

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Tony Vincent, John McLaughlin (305) 776-7770
 {sun,novavax,gould}!sunvice!tony
jmclaughlin@sun.com

John O'Brien (305) 475-7633
gatech!uflorida!novavax!john

FL - Jacksonville/Northeast: UNIX Users of Jacksonville meets the 2nd Thursday of each month.

Tom Blakely (904) 646-2820
uflorida!unf7!tbf

Emilie Olsen (904) 390-3621

FL - Melbourne: the Space Coast UNIX Users Group meets at 8pm on the 3rd Wednesday of each month at the Florida Institute of Technology.

Bill Davis (407) 242-4449
bill@ccd.harris.com

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Mike Geldner (407) 862-0949
codas!sunfla!mike

Ben Goldfarb (407) 275-2790
goldfarb@hcx9.ucf.edu

Mikel Manitiuss (407) 869-2462
 {codas,attmail}!mikel

FL - Tampa Bay: the Tampa UNIX Users Group meets the 1st Thursday of each month in Largo.

Bill Hargen (813) 530-8655
uunet!pdn!hargen

George W. Leach (813) 530-2376
uunet!pdn!reggie

GA - Atlanta: meets on the 1st Monday of each month in White Hall, Emory University.

Atlanta UNIX Users Group
 P.O. Box 12241
 Atlanta, GA 30355-2241

Marc Merlin (404) 442-4772
 Mark Landry (404) 365-8108

MI - Detroit/Ann Arbor: The SouthEastern Michigan Sun Local Users Group meets jointly with the Nameless UNIX Group on the 2nd Thursday of each month in Ann Arbor.

Steve Simmons home: (313) 426-8981
scs@lokkur.dexter.mi.us office: (313) 769-4086

K. Richard McGill Bill Bulley
rich@sendai.ann-arbor.mi.us web@applga.uucp

MI - Detroit/Ann Arbor: dinner meetings the 1st Wednesday of each month.

Linda Mason (313) 855-4220
michigan!usr/group
 P.O. Box 189602
 Farmington Hills, MI 48018-9602

MN - Minneapolis/St. Paul: meets the 1st Wednesday of each month.

UNIX Users of Minnesota Robert A. Monio
 17130 Jordan Court pnessutt@nis.mn.org
 Lakeville, MN 55044 (612) 895-7007

MO - St. Louis:

St. Louis UNIX Users Group
Plus Five Computer Services
765 Westwood, 10A
Clayton, MO 63105

Eric Kiebler
plus5!sluug
(314) 725-9492

NE - Omaha: meets the 2nd Thursday of each month.

/usr/group nebraska
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Kent Landfield
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New England - Northern: meets monthly at different sites.

Peter Schmitt
Peter.Schmitt@dartvax.dartmouth.edu
Kiewit Computation Center (603) 646-2085
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NJ - Princeton: the Princeton UNIX Users Group meets monthly.

Pat Parseghian
Dept. of Computer Science
Princeton University
Princeton, NJ 08544

pep@Princeton.EDU
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NY - New York City: Unigroup of New York City meets every other month in Manhattan.

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peterg@murphy.com

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OK - Tulsa: the Tulsa UNIX Users Group, \$USR, meets the 2nd Wednesday of each month.

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PA - Philadelphia: the UNIX SIG of the Philadelphia Area Computer Society meets the morning of the 3rd Saturday of each month.

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James Johnson (512) 331-3781
jjhnsn@cs.utexas.edu

TX - Dallas/Fort Worth:

Dallas/Fort Worth UNIX Users Group
Seny Systems, Inc.
5327 N. Central, #320
Dallas, TX 75205

Jim Hummel (214) 522-2324

TX - Houston: the Houston UNIX Users Group (Hounix) meets the 3rd Tuesday of each month.

Hounix answering machine (713) 684-6590
Bob Marcum, president (713) 270-8124
Chuck Bentley, vice-president (713) 789-8928
chuckb@hounix.uucp

TX - San Antonio: the San Antonio UNIX Users meets the 3rd Thursday of each month.

Jeff Mason
Hewlett Packard
14100 San Pedro
San Antonio, TX 78232

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(512) 494-9336

WA - Seattle: meets monthly.

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Washington, D.C.: meets the 1st Tuesday of each month.

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